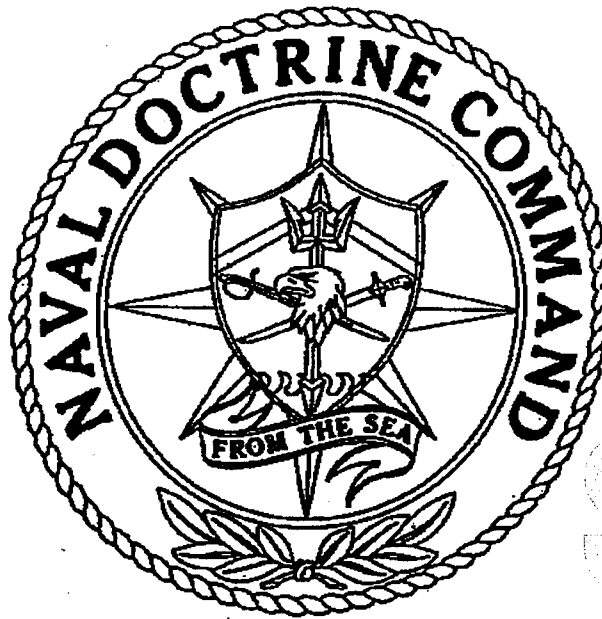


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# NAVAL DOCTRINE COMMAND

## Norfolk, Virginia



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Doctrine and Fleet Tactics in the Royal Navy

by

Dr. James J. Tritten

November 1994

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NAVAL DOCTRINE COMMAND  
Norfolk Virginia

Rear Admiral F.L. Lewis  
Commander

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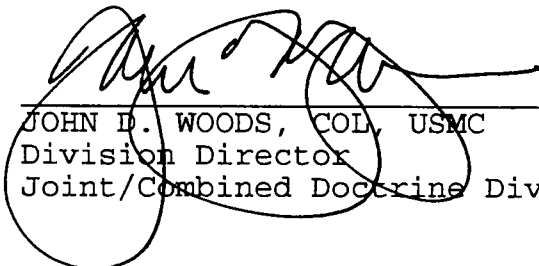
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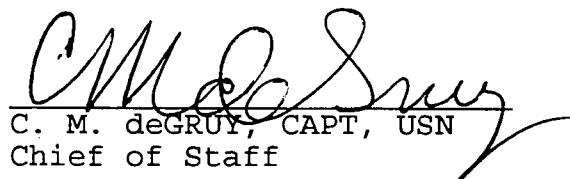
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## DOCTRINE AND FLEET TACTICS IN THE ROYAL NAVY

by  
James J. Tritten<sup>1</sup>

The U.S. Navy was characterized by a recent RAND study as being "the supra-national institution that has inherited the British Navy's throne to naval supremacy."<sup>1</sup> Given the legacy of the traditions that have passed from the Royal Navy to the U.S. Navy, one cannot consider naval doctrine in the U.S. Navy without first conducting an analysis of how navy doctrine evolved in Great Britain.<sup>2</sup> This paper reviews and analyzes doctrine in the British Navy. It concludes with an assessment of the doctrinal process in the Royal Navy and with potential lessons for us today.

### First Stirrings: the Navy Royal and Private Enterprise<sup>3</sup>

The Royal Navy's entree into the world of written doctrine commenced with King Henry VIII who took a great interest in the development and enhancement of a fighting "Navy Royal" in addition to a merchant fleet. Henry was aware of the Spaniard Alonso de Chaves' first written substantive navy doctrinal work, *Quatri partitu en cosmografia practica*, also known as *Espejo de navegantes* [Seaman's Glass], published in 1538.<sup>4</sup> Henry issued a set of written fighting instructions to develop the combat performance of his fleet. Based upon the Spanish model, they made improvements in the concept of the use of artillery and of the taking of the weather gauge, or the upwind side, during battle.<sup>5</sup> This doctrinal principle lasted until the end of the age of sail. Henry's instructions were reissued in 1544 and provided for the integration of sailing ships and rowed galleasses in a combined arms battle fleet.

During the reign of Henry VIII, the embryonic navy developed the concept of the "capital ship" with smaller supporting ships and auxiliaries, and an industrial base. During the reign of subsequent monarchs, this navy slowly acquired many of the characteristics of a modern composite fleet--one designed to perform a variety of tasks and command local waters. With this fleet, England was given a tool that allowed her to enter the international conflicts of the early 16th century.

The development of the Navy Royal was enhanced by the experiences of English privateers and semi-pirates who experimented with the use of artillery at sea to engage larger ships and convoy escorts. In subsequent engagements the navy broadside was perfected. There were signs of some development of an informal line ahead as doctrine as early as the

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<sup>1</sup> The views expressed by the author are his alone and do not necessarily represent those of the U.S. government, Department of Defense, or the U.S. Navy. The author is indebted for comments by: Eric Grove, Department of Politics, University of Hull; Professor Geoffrey Till, Department of History and International Affairs, Royal Naval College, Greenwich; and Professor Michael Palmer, East Carolina University.

Armada Battle (1588), but generally coherent navy doctrine had to await the formation of a truly modern fleet during the Commonwealth. Generally commanders of this era did not act as components of an integrated fleet but rather as individual entrepreneurs whose primary motivation was the pursuit of prize money.

### Anglo-Dutch Wars

The army-dominated English Commonwealth government followed the Dutch lead in mandating navy escorts for merchant ships. The Convoy Act of 1650 established a requirement for navy protection of shipping which eventually resulted in confrontation with French and Moslem privateers and Holland. During the subsequent Anglo-Dutch Wars (1652-1674) many of the navy engagements were fought against Dutch convoys.

Three of Oliver Cromwell's best army colonels were asked to serve as sea-going generals to lead the navy. Cromwell distrusted the monarchist tendencies of existing serving navy officers and, of course, he himself came from the army. The massing of so many cannons at sea<sup>6</sup> allowed for new tactical opportunities, recognized in revisions to tactical procedures of the day. Early cannon were notoriously inaccurate, hence the earliest doctrine was to amass offensive firepower close together in line-ahead so that a devastating broadside could be delivered. If artillery became the "king of battle" ashore, the broadside became the *sine qua non* of battle afloat. Just as firepower bred linear tactics ashore, it led to similar developments at sea.

In addition to tactical improvement, the seagoing generals also recognized the need to improve battlespace management. They were to provide some degree of order to the general chaos of early privateering sailing ship tactics--essentially "mimic the leader" where captains watched and mimicked the maneuvers of the leader (e.g., if he closed to engage, they all did). The English seagoing generals developed the ideas of a well-developed plan to manage as many as a hundred ships in battle, many of which were still privateers, as well as the need to experiment with tactics and the overall battle plan before engaging in combat. The context for most battles was defense and attack of convoys.

This period also marked the introduction of a new professional officer corps in England and a centralized organization for the administration of the fleet. Cromwell's reform efforts were supported by England's gentlemen, since they would result in emphasis placed upon maritime forces rather than the already powerful army.<sup>7</sup> Local seagoing commanders began to issue written instructions for their subordinates starting in 1636.<sup>8</sup> Parliament issued comprehensive articles of war in 1652. In 1653, the first comprehensive written doctrine was promulgated by a fleet commander. This written doctrine combined both sailing instructions and fighting instructions in separate but companion volumes. The fighting instructions portion was much shorter than the sailing instructions.

Fighting instructions cannot be studied without concurrent consideration of sailing instructions. The fighting instructions attempted to mass firepower. The commander now had

a different command and control problem, since his captains would no longer simply mimic his own behavior--they were required to place their ships in precise positions which required a system of communications for command and control. The signal book was incomplete by itself, however, since if the captain merely acted upon receipt of orders, he might fail to take advantage of a tactical opportunity in the absence of a signal or when signals could not be sent or seen. Doctrinal fighting instructions, thus, served as the understanding of what to do in the absence of other more tactical directives.

The new standing orders were immediately put to the test during three Anglo-Dutch Wars in which: (1), strategically England replaced the Dutch at sea essentially throughout the world; (2), operationally England executed a series of campaigns including several devastating convoy battles, blockades, and the bombardment of the Dutch shoreline; and (3) the seagoing generals more than held their own against the Dutch fleet led by the greatest admirals of the world. The English success was generally due to the massing of superior firepower and refusing to let the Dutch close for boarding. The defeated Dutch, on the other hand, continued to rely on the *mêlée* and had not yet accepted the primacy of artillery.

The Cromwell-era fighting instructions and other reforms were not repudiated with the dissolution of the Commonwealth. Indeed, the return of the monarchy under Charles II had a beneficial effect upon the essentially untainted fleet which was now commissioned the Royal Navy and provided with a new benefactor at the direct expense of the army. This Royal Navy may have had its origins in the need to protect convoys, but with the combat-proven opportunities provided by artillery and massing, doctrine began to shift to the offensive form of warfare. Simply put, the fleet could be used for other than defensive tasks.

Doctrinal sailing and fighting instructions were issued in various forms by several different fleet commanders. These instructions were anything but inflexible and were issued as guides for action unlikely to be scrupulously followed in the heat of battle. Revisions to the fighting instructions and new instructions reflecting combat lessons learned were repeatedly issued during the wars in 1654, 1655, 1666, 1672, and for the first time as an integrated whole in 1672-73.<sup>9</sup> These revised fighting instructions allowed for tactical flexibility on the part of the local commander--to include *mêlée* tactics and the breaking of the line. A frequently overlooked, but important, function of the fighting and sailing instructions was to ensure that commanders acted more as components of an integrated fleet whose purpose was political rather than as entrepreneurs whose motivation was the pursuit of prize money.

#### Commanders-in-Chief Sailing and Fighting Instructions

Following the Anglo-Dutch Wars, newly revised fighting instructions were issued in 1678, 1688, 1690, 1691, 1695, 1702, and 1703. Many of these revisions allowed for additional initiative on the part of the local commander. The first fleet-wide sailing and fighting instructions were issued during the reign of William and Mary (1689-1702). The

actual date of their publication is not precisely known. These first fleet-wide instructions generally followed those previously issued in 1672-73.

During the War of the League of Augsburg (1688-1697), the French managed to unite their Toulon and Brest fleets into one fighting unit. The numerically inferior English initially elected to maintain a "fleet-in-being" until detached units could return to bolster their defense. This concept of a fleet-in-being was for a numerically inferior force to remain in port where they would threaten to sortie against the enemy. Since they did not seek engagement, the effectiveness of the effort would depend upon the enemy's perception of their combat capability--they served more as a deterrent than a true fighting force. If the French could be deterred from invading England by the presence of the fleet-in-being, then it would have been a successful use of assets. The Crown disagreed with the concept and a combined English and Dutch fleet sortied under Admiral Lord Herbert Torrington, who was promptly defeated at the Battle off Beachy Head [Béziers] (1690) by Admiral Anne-Hilarion de Costentin, Comte de Tourville. Fortunately, the French were unable to capitalize upon their tactical victory.

Following successful experiences by a combined Anglo-Dutch fleet obtained at the 1704 Battle of Malaga using the line-ahead formation, the English attitude toward doctrine may have split into two camps.<sup>10</sup> The first camp emphasized the ability of the line-ahead to bring the maximum number of guns to bear on the enemy. Malaga had demonstrated that victory was possible with a well-disciplined battle line and it naturally followed that defeat would result when this doctrine was not followed. This first group is referred to by some historians as doctrinal "formalists." The second group placed more emphasis on independent maneuver and is referred to by some historians as the "*mêléeists*." The maneuver-oriented *mêlée* doctrine attracted some of the more dashing English commanders who did not want to be as bound by rules and had the skills to master the freedom of maneuver warfare.

The first version of what eventually came to be known as the *Permanent Sailing and Fighting Instructions* was issued during the reign of Queen Anne (1702-1714), probably about the time that the Act of Union created Great Britain. The various instructions issued by the fleet commanders-in-chief, and later after 1799 by the Admiralty, gradually became known as *Sailing and Fighting Instructions for Her Majesty's Fleet*. These fighting instructions were authoritative but not binding on the admirals in the fleet. Although most of the fighting instructions were printed by the Admiralty for use by the fleet commander-in-chief, they became regulatory only when signed by the fleet admiral and issued to subordinates. Copies of these fighting instructions were made available to all admirals when they hoisted their flags. Tactical orders based upon the instructions were mandatory on the individual ship captains who were in receipt of signals from the instructions.

In 1714, a private publisher produced an unofficial book which enhanced the presentation, and presumably the comprehension, of the signals portion of the formal fighting instructions. Jonathan Greenwood's *The Sailing and Fighting Instructions or Signals as They are Observed in the Royal Navy of Great Britain* even added signals not currently in use by

the fleet. This unofficial publication was adopted by at least one Mediterranean fleet commander and an additional privately published set of fighting instructions appeared in 1748.

Private publications of a doctrinal nature had appeared earlier in Britain; for example *The Seaman's Vade-Mecum and Defensive War at Sea* (1700) which developed recommendations for the defense of merchant shipping including convoys. Convoy defense doctrine in this era was quite sophisticated with the understood role of the escort to sacrifice himself if necessary to allow the merchants to escape. Parliament passed the Cruisers and Convoys Act in 1708 resulting in subsequent instructions being issued for commanders of warships and merchants to properly interact.

During the first part of the 18th century, the commanders-in-chief's fighting instructions were not routinely revised, presumably because none of the maritime campaigns lasted long enough to warrant their reconsideration and there were no major technological breakthroughs. On the other hand, additional instructions, also doctrinal in nature, were issued by the fleet commanders; first in 1678 and regularly after 1710. These additional instructions were equally as important as the main fighting instructions but were issued by local commanders who were then held accountable for their use. If validated by combat success, then additional instructions could lead to additional deviations. Unfortunately, when the additional instructions were not validated in combat and the fighting instructions provided an alternative course of action, they might also provide the justification for punitive judgement during a court martial.

#### Developments During the Wars Against the French Monarchy

Courts martial for combat failure while not adhering to the existing fighting instructions were an ever-present threat to the commander in the Royal Navy during the long years of war with the French. There was an infamous case of doctrinaire adherence to "keeping the line" above all costs following the disastrous February 1744 battle off Toulon. Admiral Thomas Mathews had expected his subordinate commander, Vice Admiral Richard Lestock, to use common sense and engage the enemy when Mathews signaled for an attack and maneuvered in what was virtually a line-abreast. Mathews' continued flying of the signal for line-ahead "confused" Lestock. When Lestock maintained his station in line-ahead, and failed to quickly join the engagement, he was arrested by Mathews.

Complicating the problem was Admiral Mathews' failure to get his fleet into proper station the previous night. Mathews had in fact issued the proper orders but his subordinates had failed to execute them. The fleet became further dispersed during the night. The next day, Vice Admiral Lestock ignored some of Mathews instructions to increase sail and get into line-ahead position more quickly; indeed he actually shortened sail on two occasions. Mathews and Lestock were not on the best of terms before the battle. Hence, the failures at Toulon are a bit more complicated than whether officers blindly adhered to doctrine in lieu of common sense.



At the subsequent court martial, Lestock was exonerated because he had followed his commander's primary signal (line-ahead) during an extremely confusing engagement with changing and conflicting signals and maneuvers. Mathews was cashiered instead; primarily due to the escape of the Franco-Spanish fleet under Admiral La Bruyère de Court. Four captains who had exercised initiative under conflicting signals and maneuvers, and in doing so deviated from the standard and additional instructions, were also cashiered.

The scandal of Toulon provoked reform and new instructions in the Mediterranean fleet were prepared to clear up the possibilities of confusion. Mutual support was to take precedence over maintenance of the battle line. Abandonment of the line-ahead in favor of the general chase was sanctioned when the enemy fleet was markedly inferior, disabled, or "on the run." Of course, if the admiral gave signal for the general chase and failed, he would still be subject to close after-action scrutiny by a court martial.

Admiral Baron George Anson took advantage of existing loopholes in the fighting instructions regarding maintenance of the line-ahead during the First Battle off Cape Finisterre (1747). By being successful in both defeat of the French warships and capture of numerous convoy merchants, he avoided a court martial for his use of the general chase. Similarly, Admiral Sir Edward Hawke ordered a general chase in the successful Second Battle off Cape Finisterre (1747). New additional instructions followed further refining and clarifying the doctrine contained in the fighting instructions.

As a result of the intervention of Parliament, joint doctrine received extensive development during the Seven Years War (1756-1763). William Pitt, Secretary of State and head of the House of Commons, ordered his generals and admirals to cooperate, which they did with remarkable success. Elaborate written doctrine was prepared for the transport, protection, disembarkment, and support for ground troops and was used successfully in the captures of Louisbourg (1758), Quebec (1759), and *Belle Île* (1761). This followed the disastrous performance of Admiral Edward Vernon and General Wentworth's abortive amphibious operation against Cartagena (1740-1741).

There was also additional development of doctrine for blockading and observation squadrons as well as the interdiction of ships attempting to leave a port. Much of this doctrinal development was published in the form of private signal books, for which there was no official commander-in-chief or Admiralty sanction. The successful telegraph signals system that later supported Admiral Lord Horatio Nelson at Trafalgar has its birth in the privately published doctrinal and signal development that took place in this era.

In a celebrated Seven Years War episode of failure tied to the fighting instructions, the British failed to fully engage a French fleet off Minorca in 1756 supporting the landing of forces and resulting in the eventual loss of the garrison. Although the British Admiral Sir John Byng was eventually shot for his performance during this episode, it was not for failing to follow the existing fighting instructions,<sup>11</sup> although that certainly was a major element of the prosecution.

Byng in fact deviated from the fighting instructions in his plan of attack at Minorca. However, he was shot because the failed to gain a victory when one was needed. The British under General Edward Braddock had just suffered a major loss against the French and Indians in America. The second major defeat at Minorca threatened the existing British government. The government also was sensitive to charges that it had not provided Byng with enough ships in the first place.

Simply put, a scapegoat was needed. Braddock had the fortune of being killed in Pennsylvania and Byng was available. The court martial found Byng guilty for failing to "do his utmost" to either defeat the French fleet or relieve the garrison on Minorca. In accordance with the law of 1749, the death penalty was mandated for admirals who failed to try hard enough. A review of the tactical situation, however, can lead one to the conclusion that neither defeat of the enemy fleet nor relief of the Minorca garrison were possible and that even had Byng fully engaged the French, victory was by no means certain.

Admiral Byng's plan, had it been properly executed by his captains, might (or might not) have resulted in a victory. In addition to the difficulties in signaling his intentions from the rear of the formation, the existing signal books did not contain provisions for exactly what Byng intended. Byng further complicated the matter by continuing to fly the line-ahead flag, as had Mathews at Toulon, while also signaling to engage and simultaneously maneuvering into almost the same line-abreast attack against a well-formed line.

The shooting of Byng had major repercussions throughout the Royal Navy. Rather than making the fighting instructions dogmatic, however, it had the opposite effect. Admiral Hawke's victory at Quiberon Bay (1759) was, in part, due to his courageous decision to again initiate a chase before being properly formed into a battle line. This victory had strategic repercussions. The loss of their escort force ended French plans to transport ground forces from Quebec to Europe for an invasion of England. Concurrent with the French loss at the Battle of Lagos (1759), again due to a general chase and not line ahead, and the loss of Quebec (1759), the result of Quiberon was the shift in the focus of the war from contesting control of the seas to the application of navy power from the sea to the shore.

Common sense was introduced into subsequent courts martial involving the failure to follow doctrine. Admiral Augustus Keppel was exonerated for failing to follow the fighting instructions (he did not "waste" time to form a battle line and directly engaged Admiral Louis Guillouet, Comte d'Orvilliers) and for failing to "do his utmost" (the fleets passed each other on opposite tracks) at the Battle of Ushant (1778) where Keppel was defeated.

Another private doctrinal book, *Naval Evolutions: or a System of Sea Discipline* (1762), was published by Lieutenant Charles O'Bryen, RN. This book was largely based upon Père Paul Hoste's *L'Art des armées navales ou traité des évolutions navales* (1697). Although the translation of the French extracts was poor and the experiences of the recent Seven Years War tended to discount much of the doctrine, it signaled a growing desire by fleet officers to have a tactical manual in book format.

The publication of then-Captain Sébastien François de Bigot, Vicomte de Morogues' *Tactique navale ou traité des évolutions et des signaux* in 1763 was noticed not only in Paris but also in London. Within four years, it had been privately translated into English--probably by Charles or Christopher O'Bryen. Like O'Bryen's earlier work, only sections were translated and the quality of the translation was poor. The translation of Morogues' work included an additional section on fighting at sea probably authored by one of the sea-going O'Bryen family.

A movement was made to capitalize on these privately published doctrinal books, by officially revising the fighting instructions. However, no one on active duty was willing to take on the commanders-in-chief, hence the standing fighting instructions were allowed to languish "as is" and local commanders continued to issue and revise additional instructions. These additional instructions indicated a growth in doctrine that capitalized upon the lessons of the Seven Years War. Finally the Admiralty itself issued a supplement to the standing fighting instructions codifying local practice, thus avoiding a debate over existing articles versus established procedures in the fleet. Unsettled was the proliferation of tactical doctrine, sailing, and fighting instructions by both the commanders-in-chief and private individuals--all in use by commanders at sea.

Admiral Lord Richard Howe, commander of the British fleet in North America during the opening days of the American War of Independence, published his own quite sophisticated signals book. Unlike the standing fighting instructions provided by the Admiralty, Howe's *Instructions for the Conduct of the Ships of War, Explanatory of, and Relative to the Signals contained in the Signal-Book Herewith Delivered* (1776) consisted of standing orders, explanations of tactical ideas, and the standardization for signaling evolutions. Howe adopted some innovative maneuvers for the execution of the battle line. Howe issued additional instructions the next year with further emphasis on the role of the individual commanding officer.

Taken as a whole, the system of fighting instructions now in force off North America was so complex that it would have required an extensive period of instruction and exercises before the fleet could respond to the directions of its commander. There is evidence that Howe held regular meetings of his admirals and captains so that he could explain his doctrine and that he regularly exercised them as well. Howe issued additional instructions in 1778 that formed the basis of a reconnaissance system later adopted by Nelson before his battle at Trafalgar. By the end of his service in North America in 1778, Howe had created the system of instructions and signals that he would subsequently use while in command of the Channel Fleet.

*A Set of Signals for a Fleet on a plan entirely new* (1777) by Lieutenant Sir Charles Henry Knowles, another privately published book, used the best parts of Morogues' *Tactique navale ou traité des évolutions et des signaux* and provided for actions by fleets or separate divisions. In his subsequent *Fighting and Sailing Instructions* published in 1798, but written

in 1780, Knowles expanded upon individual ship engagements to a degree that reflected the subsequent performance by Nelson.

Rear Admiral Richard Kempenfelt, chief of staff of the Channel Fleet in 1779, singlehandedly embarked on the most ambitious tactical reforms ever performed by any one officer in history. During a twenty-seven month period, he issued more signal books and fighting instructions than any one before or after. Many of these instructions were influenced by Howe. One version issued by Kempenfelt was an exact copy of a signal books used by the French. It was, however, not their centralized version but rather a separate system adopted by Rear Admiral François Joseph Paul, Comte de Grasse-Tilly, a French officer to whom the United States owes a great debt. Kempenfelt had blended the best of Howe and the French into a system of instructions and signals that allowed for greater control over a larger fleet engaged in fighting a well-disciplined opponent.

Innovations in the Channel Fleet were generally confined to that fleet. Despite Howe's earlier efforts in North America, officers subsequently assigned to those waters and to the West and East Indies generally reverted to the combat-proven fighting instructions with additional instructions issued as a supplement. Natural conservatism as well as a primitive communications system hampered transmission of new ideas from Europe to the far-flung reaches of the empire. In addition, the commanders in those distant stations had their own ideas about how to defeat the French and the Channel Fleet had yet to prove the value of their innovations in major combat.

Admiral Lord George Brydges Rodney was one of those commanders who was willing to test the waters with new doctrine. Departing European waters with a considerable portion of the Channel Fleet, Rodney seized the opportunity to attack a Spanish convoy and then a Spanish squadron at the Battle of Cape St. Vincent, also known as the "Moonlight Battle" and the Battle of Santa María (1780). Rodney used the new freedom to his advantage--he signaled a general chase instead of maintaining the battle line. After his arrival in Caribbean waters, Rodney met a French squadron at Martinique (1780) but failed to conclude a successful engagement. Rodney censured his captains for failing to break tradition and execute a *mêlée*. He subsequently drilled them in his doctrine.

A series of doctrinal issues being debated at the time included: (1), if the admiral should ride at the van, at the center, or outside the line; and (2), if he should sail in a heavily armed ship-of-the-line or in a fast frigate? Shifting the flag to a frigate had been tried by British Lord Howe off Rhode Island in 1778 and Admiral Sir George Rodney did the same off Martinique in 1780. Following de Grasse's capture at the Saints (1782), French doctrine changed to require that commanders-in-chief fight from frigates. Generally the British ended their experimentation with the placement of the admiral in a heavily armed ship at the center.

The new doctrine of local instructions taking precedence was not yet foolproof. The defeat of Admiral Lord Thomas Graves at the Battle off the Virginia Capes (1781) can, in part, be explained by the lack of clarity in his local doctrine. Graves had only recently taken

over command of the North America station and had yet to hold a meeting with his commanders explaining his own views on doctrine and signals. Furthermore, ships of the West Indies and North American squadrons had been using different signal books. When Admiral Samuel Viscount Hood failed to use common sense and engage de Grasse despite some confusing signals, he could defend his actions by strict adherence to the precise signals flown by Graves. This all sounds remarkably like what had happened to Mathews and Lestock at Toulon and very unlike what would happen at Trafalgar. Graves' failure to attack the Comte de Grasse until the French had sortied from their anchorage would also not be repeated by Nelson at the Nile.

A retired merchant from Edinburgh, John Clerk of Eldon, analyzed the navy tactical issues of the day and wrote an *Essay on Naval Tactics* in 1782. This essay pointed out the superiority of the French system, where it was superior, and recommended concentrating strength against weakness--specifically against only a portion of the enemy's line. In fact, this tactic was used by Rodney in his successful and very significant victory in the Battle of the Saints, that same year, resulting in the capture and disgrace of Admiral de Grasse. Rodney failed to fully exploit the victory, indicating that even innovative commanders were still somewhat conservative. Discipline was still so great at this time that, although some of his advance ships were in a position to fire on French ships being chased at the Battle of the Saints, permission to fire was denied by Admiral Hood, since he had not been granted permission by his senior, Admiral Rodney.<sup>12</sup>

Although Clerk claimed credit for influencing Rodney's action, in point of fact, Rodney did not plan to break the line nor was such a maneuver new. Nevertheless, the victory at the Saints was the major victory by the Royal Navy during this phase of the many years of war with France and Rodney's supposed action and the influence of Clerk's book have taken on a life of their own. Clerk was extremely well connected with higher navy circles and had access to the evidence presented at various courts-martial that resulted from some of the more important battles. His analysis and logic were sound. Independently wealthy and with no official connections to the Admiralty, Clerk was able to write his own views with no fear of reprisal nor of financial ruin. Although Clerk's book was a direct attack on the fighting instructions it had an influence on British Navy thinking.<sup>13</sup> It was decidedly offensive in its orientation. One of the commanders who favored it was Admiral Lord Horatio Nelson, who reportedly had his chaplain read it to him.

The loss of the North American colonies and Howe's assignment to the Admiralty from 1783-88 again stimulated doctrinal reform in the Royal Navy. A number of fighting and additional instructions were issued and reissued. Captain Jacques Bourd  de Villehuet's 1765 *Le manoeuvrier ou essai sur la th orie et la pratique des mouvements du navire et des  volutions navales* and Commodore Jurien, Vicomte de Grenier's 1787 *L'art de la guerre sur mer, ou tactique navale* were fully and accurately translated into English in 1787-88. The latter is one of the most masterful books on tactics written during the age of sail and fully challenged the dogma of the line-ahead.

## Doctrine During Wars Against the French Republic

The privately published signals books *Signal Book for the Ships of War* (1790) was issued to the Channel Fleet, thus capping Howe's long process of doctrinal reform. Howe experimented with this revised doctrine and signals during the Summer 1790 Channel Fleet exercises. By the end of that year, Howe retired and the mantle of doctrinal reform fell to the new fleet commander, Lord Hood. Hood was more interested in fleet discipline and station keeping than doctrinal reform. He held exercises in 1792 to drill his captains in accordance with his version of doctrine and signals that did not include many of the new innovations permitted by his predecessor.

With the outbreak of war with France in 1793, Howe was recalled and once again took command of the Channel Fleet. By now Howe had lost some of his enthusiasm for reform and agreed that until his captains could perform the basic tasks in accordance with standing doctrine, there would be no need to grant them a freer hand. Howe led an extremely well-disciplined and recently exercised Channel Fleet against Rear Admiral Louis Thomas, Comte de Villaret de Joyeuse's Brest fleet in the Battle of the First of June, 1794.<sup>14</sup> Villaret de Joyeuse had been a lieutenant at the time of the French Revolution (1789) as were his fellow flag officers. Most of the French captains had been very junior officers, captains or mates of merchant ships, and a few former enlisted men. Given the performance of the Brest fleet against the well-oiled British and their able commander, it speaks well of Villaret de Joyeuse's leadership abilities and/or the value of fighting spirit in combat.

The Glorious First of June lasted for five days and four nights of continuous combat. Howe employed the new idea of an advanced squadron separated from the main battle fleet which could provide intelligence information and act as a tactical reserve. Generally at this time, the preferred method for breaking the line was to mass through a single vulnerable point. Lord Howe's method at the Battle of the First of June was to have his whole fleet simultaneously cut through the line at all points, each ship wheeling into the enemy line and one at a time cutting between the sterns and bows of the nearest enemy ships, thus allowing them to engage the French on the lee side which was neither loaded nor properly manned. The tactic also was a hedge against the French escaping to leeward. Howe deserves credit as an innovative tactician, a signals specialist, and a successful commander in battle who never lost sight of the need to defeat the enemy fleet.

At the end of the battle, Howe had the honor of a victory unparalleled during the past one hundred years. Six French ships-of-the-line were carried off to Spithead, one had been sunk, and the *mêlée* engagement had allowed superior British gunnery to wreak havoc on the survivors. On the other hand, the convoy of 130 ships bringing supplies from America had been allowed to escape and enter French ports. Indeed, not a single British ship appears to have even laid eyes on the convoy. Furthermore, Howe failed to fully exploit the victory, as had Rodney at the Saints, but one can more easily excuse this given the length of the battle, Howe's age (then 68), and damage to the British fleet inflicted by a still capable French fleet.

This British success was followed with the formation of a Combined Anglo-Portuguese Fleet. Howe issued *Orders for Combined Fleet* which essentially made use of the new squadron as a separate maneuver unit. Given his recent success with the well-disciplined Channel Fleet, it is no wonder that Howe did not attempt to fully integrate the Portuguese. There was a ferment of tactical and signalling developments from 1793-95, comparable to the earlier period of bustle during the American War of Independence. This culminated with the issuance by Sir John Jervis, commander of the Mediterranean Fleet, in January 1796, of a *Secret Instruction* containing innovative tactical options. Jervis planned to use the new tactic to unleash his captains in a general *mêlée* once he had broken the enemy line and they had separated and were disorganized. Jervis also adopted the advanced squadron concept, used by Howe at the Glorious First of June.

Jervis' faith in the superiority of his captains was warranted. The next period of British tactical successes were, in part, due to the bold actions of some leading and extremely confident commanders. Rear Admiral Sir William Cornwallis, commander of a small squadron attacked by the Brest fleet off *Belle Île* (1795), fought on the offensive and succeeded in convincing the French that additional ships were en route. Then-Captain Horatio Nelson exercised an offensive fighting spirit during a series of minor engagements with the Mediterranean Fleet that same year. These engagements of themselves are not important, but they began to establish Nelson as a commander who sought to exploit the immediate tactical victories obtained.

Jervis himself demonstrated superior seamanship, innovation in separating the convoy from her escorts, and good judgment at the Battle of Cape St. Vincent (1797) where his well-trained Mediterranean Fleet attacked a Spanish fleet having nearly twice the firepower. When Jervis saw an opportunity to deviate from the battle line, he signaled authority to his flag officers and captains to form whatever formations they wished in order to exploit their tactical advantage. Then-Commodore Nelson anticipated this signal and was able to capitalize upon it with the personal capture of two ships and the bold engagement of the flagship which had nearly twice as many guns and was the most powerful ship afloat. Jervis chose to not report that Nelson's success was due to his unilateral decision to go beyond his signalled authority, thus disobeying orders, in order to take advantage of an excellent tactical opportunity.<sup>15</sup>

Another privately published doctrinal book, *A System of Naval Tactics*, appeared in 1797 and is attributed to D. Steel.<sup>16</sup> Much of the document was a reworking of earlier French doctrinal books by Père Paul Hoste and Bourdé de Villehuet. The section of *A System of Naval Tactics* dealing with the Royal Navy was a more readable version of Howe's fighting and sailing instructions without any reference to engaging the enemy. It appeared that concerns over security of one's fighting instructions were beginning to be seen. Parliament got into the act of navy doctrine again, passing a law in 1798 that made convoying compulsory.

In late 1797, Britain secured one of her most notable victories of the era. Admiral Adam Duncan, first Viscount of Duncan, employed extremely aggressive tactics and an offensive fighting spirit and thoroughly defeated a Dutch fleet at the Battle of Camperdown. Duncan made good use of tactical signals to outsail the Dutch and bring his superior firepower to bear as rapidly as possible. The fast tempo of the battle and the inferiority of their ships allowed the Dutch to be overwhelmed before they could escape leeward into shallower coastal waters. Duncan's weatherside attack in columns of two splitting the Dutch line was repeated by Nelson at Trafalgar.

In 1799, the Admiralty took over responsibility for the publication of the fighting instructions, where it remained until 1914 when it reverted back to the fleet commanders-in-chief. The instructions, included in the *Signal Book for Ships of War, 1799*, continued to stress the line-ahead, despite current practice in the fleet and combat successes with the *mêlée*. These fighting instructions were mandatory for the fleet, although the cunning Nelson was able to justify deviations to himself if circumstances and his personal views conflicted with them.

### The Nelson "Touch"

Rear Admiral Nelson's victory over the French at the Battle of the Nile (1798) gave Britain their greatest victory in over a hundred years. Nelson benefited from major errors on the part of the French commander, Admiral François Paul Brueys d'Aiguilliers who tried to fight on the defensive. On the other hand, Nelson exhibited true genius in a daring night attack and in a rapid tempo which would overwhelm his opponent. Vice Admiral Nelson's subsequent victory over the Danish at Copenhagen (1801) pitted him against a maldeployed stationary fleet and fortifications operating under a defensive doctrine. Although he was in range of their shore batteries the night before the battle, Nelson held a dinner party aboard his flagship and prepared detailed and written orders to each of his captains outlining the plan of attack in accordance with the newly issued Admiralty day signals book.

The plethora of newly issued signals books were not universally popular in the fleet since they did not allow communication of complex ideas. Sir Home Popham, a navy officer who would later rise to the rank of Admiral, created an innovative and unofficial system of telegraphic signals making use of numbers and later letters which substituted for useful words and phrases which could be combined to make sentences. This new system placed a powerful tool into the hands of the admiral. Popham's model became an instant success in the fleet although he was wise enough to disclaim it as a mere adjunct to the official system and thus avoid a formal confrontation with the Admiralty. Nelson formally adopted Popham's system of signals in 1803 and made full use of them off Toulon in the subsequently renewed war with France.

A series of minor engagements followed the renewal of warfare but the major concern in Britain was over an invasion. In a series of fleet maneuvers, the Royal Navy deterred the invasion of the British Isles. Napoleon Bonaparte had over 150,000 troops assembled with a



transport fleet that was unable to sail across the channel due to the presence of the Royal Navy. Napoleon abandoned his plan to invade Britain due to the inability of the French fleet to mass in sufficient numbers to meet the challenge of the Royal Navy.

The most celebrated of all battles in the age of sail, Trafalgar (1805), pitted a well-equipped fleet and combat-experienced commanders against the Combined Franco-Spanish Fleet which had neither adequate training nor well-equipped ships.<sup>17</sup> Nelson's objectives were the complete annihilation of the Combined Fleet. Nelson imbued his spirit of the offensive into every one of his captains. His written plan of attack made his objectives very clear--complete destruction and not the taking of prizes for the accumulation of prize money.

Nelson was to form into two parallel columns in line-ahead, with himself and his second in command leading the charge (in violation of Admiralty doctrine), and then to boldly close the Combined Fleet as rapidly as possible, making it more difficult to be hit and minimizing the time British ships would be exposed to defensive fire. A rapid attack would also minimize the chances that the Combined Fleet could escape to leeward.

Nelson also planned to conceal the points of his main attack until the last possible minute. Once his two squadrons broke through the enemy line, the aim was to concentrate offensive strength against the weakness of the split enemy fleet. Nelson improved upon this French concept of strength against weakness with another French concept, the *pelotons*, specific tasks for specific portions of the fleet.

This was a replacement of the now-centralized formalist doctrine of maintaining the line not with just a signal for general chase but rather with a new local doctrine of *guerre à outrance* (war to the extreme). Based upon his previous battle experience against the French, Nelson felt that he could go beyond the general chase authority granted in the fighting instructions and that he could take the next step. This would not be possible against all enemies, but was appropriate at this time and place.

The selection of the time and place of his attack was aided by a superior reconnaissance plan aided by Popham's new signalling system. Nelson also used an advance squadron which could, if necessary, engage the enemy until such time as the main battle fleet arrived.

Nelson generally followed his battle plan and the resulting *mêlée* was a major route of the Combined Fleet due to: (1), the superiority of artillery and gunnery by the British; (2), their superiority at maneuver and mutual support; and (3), the general overall inferior condition of the Combined Fleet. Both sides fought bravely. The British fleet had never properly formed into their two columns of line-ahead. Proper formation took second seat to the offensive spirit and tempo. Keeping the battle line was no longer all-important. Speed allowed them to overcome the charge directly into the teeth of an enemy who had essentially "crossed Nelson's T."

Doctrine, of course, was used by Nelson, but often in a non-written form reflecting what evolved by Trafalgar as his decentralized philosophy of command and control. As Nelson's experience grew he relied, in lieu of formal signals and tight control during the battle, on a series of meetings held before the coming battle with his commanders (his band of brothers) in which he personally communicated his perception of the alternative courses the battle might take and the basic actions that were expected of each.<sup>18</sup> His famous line from his pre-battle memorandum: "no captain can do very wrong if he places his ship along side that of an enemy,"<sup>19</sup> is typical of a doctrinal style that matched his personal abilities as a charismatic leader--atypical of the commander in the age of sail. We should remember that such orders are only proper against a ineffectual enemy.

Nelson's success, in part, was due to his style of doctrine, unwritten but clear in the minds of his subordinate commanders. His style proved extremely effective.<sup>20</sup> Whereas Nelson's signal, to form into two columns, flown at the beginning of the Trafalgar battle might be misinterpreted by those not present at the battle to indicate precise instructions to be followed to the letter, there was no misinterpretation in the minds of his captains. His captains continued to close the enemy at all possible speed while simultaneously attempting to form into two columns in "irregular line-ahead." This was not the type of behavior seen at Toulon (1744) or off the Virginia Capes (1781).

Nelson's decision-making process was more intuitive rather than analytic but this should not imply that he improvised in the middle of the battle. On the contrary, he planned his battles using both his intuitive and analytic skills. Nelson was convinced that with the proper attitude and sufficiently equipped and trained force, that one need only wade into the enemy. This had been the essence of Jervis' *Secret Instruction* of 1796. Indeed, none of the maneuvers that Nelson employed at Trafalgar were new and all were anticipated by Vice Admiral Pierre Charles Jean-Baptiste Silvestre, Comte de Villeneuve. On the other hand, Nelson did not provide his subordinates a total free hand, as is often thought.

There is more to Nelson's success than employing good doctrine and having well trained forces. There is the intangible factor of Nelson's own charismatic personality which inspired men to greatness. Nelson's pre-battle meetings had more in common with Christ's last supper than with what we would expect in a council of war. Where others sought to use the signal book as the means to bring order to the battlespace, Nelson strove for a chaos contained within the bounds of capabilities shaped by his own personal doctrine. Nelson thus is an aberration who successfully escaped the confinement of the paradigm of the era and embraced the "fog of war" as an ally.

The Admiralty's signals books and fighting instructions issued after Trafalgar by Admiral Popham made use of the tactical innovations initiated by Nelson at the Nile and Trafalgar but their authors never understood the conditions that made such innovations possible. Nelson's successors thus attempted to emulate the "Nelson Touch" with their own doctrinal writings, but they could not possibly capture the essence of his brilliance in any signal book. Simply put, the style of warfare practiced at Trafalgar was the correct style for a particular set of

circumstances and under a unique charismatic leader whose essence could never be "bottled." The myth of the "Nelson Touch" and the attempt to duplicate it became one of the major themes around which one can study later developments in the navy.

### The End of the Age of Sail

Gradually written doctrine in the form of doctrinaire fighting instructions fell into disuse. When faced with an enemy that did not use rigid and effective tactics based upon sound doctrine, there appeared to be no need for the same on the part of the Royal Navy. If there were not to be skillfully prepared defenses, then there did not appear to be any need for skillfully prepared offenses. The attacker merely needed to be unleashed and pointed in the right direction.

In another of what would prove to be a long string of amphibious failures, the British mounted the largest (to date) invasion of the Dutch coast in 1809. Designed to put pressure on Napoleon's rear, and thus be supportive of their Austrian allies, the assault on Walcheren Island involved some 40,000 troops, 400 transports and almost 200 navy escorts. The Walcheren operation resulted in an eventual evacuation and stands as a major case study of the inability to match political objectives with military operations and poor planning for a joint operation.

The last major British Navy victory in the age of sail was the controversial Battle of Navarino (1827).<sup>21</sup> A mere twelve years after Waterloo, Navarino saw the French, British, and Russians allied during one battle against the Turks. The three European squadrons fought on the offensive against Turkish ships, under Admiral Ibrahim Pasha, which were anchored in a defensive formation. The Turks should have never allowed the allied fleet to enter the bay--a mistake repeated by the Spanish at Manila Bay (1898). The result of the battle was a total annihilation of the Turkish fleet and the liberation of Greece. Unfortunately, Vice Admiral Sir Edward Codrington's victory so embarrassed the Turks that it was diplomatically inexpedient and he was recalled and his career ruined.

During the long wars with the continental powers in Europe, British Navy doctrine was to primarily engage the enemy fleet and to either destroy it (it was exceedingly difficult to actually sink a wooden warship) or to capture enemy ships as prizes. Britain essentially sought general command of the seas via warfare of annihilation. If tasked with the defense of a convoy or a landing force, navy doctrine called for the escort force to offensively engage the enemy fleet posing a threat rather than adopt a defensive position. If tasked with eliminating a threat of invasion, the fleet would offensively engage the enemy fleet posing a threat. If tasked with eliminating the source of power of a maritime nation, doctrine called for the destruction of the enemy fleet first and only then exploitation of command of the sea by the engagement of merchants.

The primary tactics of the Royal Navy were to attack on the offensive from the windward side and then to attempt to open the ship's hull and kill the crew with firepower

and, only if necessary, to engage in close combat. In general, formal doctrine called for the strict maintenance of the line-ahead, as discussed above, with deviations from doctrine tacitly approved when commanders were successful. Between Toulon (1744) and the Saints (1782), the British fought 13 battles to a draw using linear tactics while they obtained 6 victories by abandoning the line. Clearly there is a need to ensure that successful fleet lessons learned are able to find themselves accepted as new doctrine.

The Admiralty was not oblivious to these statistics. The issue was that if one formed the line-ahead, you were more likely to avoid defeat than if you abandoned the line. Hence, the line-ahead gave the commander his best guarantee of not failing even though he might not succeed. The personality of many of England's leading commanders was such that they felt their individual initiative, skill, and spirit allowed them to abandon the safety of the defensive formalist school of doctrine in favor of the *mêlée*.

### The Age of the Ironclad

Although maritime technology advanced, in the form of steam and the screw propeller, it was some time before the Royal Navy converted and took the next step of ironclads. The simple reason appears to be that the role of oceanic policeman against lower technology forces could be carried out with the old wooden ships of sail. Even when the navy adopted the new technologies, the lack of constant warfare put tactical and doctrinal innovation into the schoolhouse and not with the active fleet. Small detached units were left to and successfully improvised their own local doctrine. Technological improvements now allowed more certainty (contrasted to the uncertainty of sailing via wind power) and more distant control (via signals) as this era progressed. The improved signalling capabilities may have been part of the downfall of doctrinal development--after all, why take local initiative when the admiral, and later the Admiralty, will send orders directly.

With the formation of the Royal United Services Institute for Defence Studies [RUSI] (1831), an unofficial forum was created for the discussion of military issues. RUSI began publishing a journal in 1859, creating a vehicle for the publication of new ideas. Journals and societies such as these flourished throughout the world, and they provided a forum for doctrinal development not under the thumb of official navy bureaucracy.<sup>22</sup> Similarly, the Naval Records Society allowed scholars to research documents from Royal Navy history. Père Paul Hoste's *L'Art des armées navales ou traité des évolutions navales* (1697) was again, but this time fully, translated into English in 1834, this time by Captain J.D. Boswall, RN.

In 1843 and 1846, Captain C.R. Moorsom, RN published two brief works on navy tactics which included a section on the actions between steamships. Moorsom was later promoted to Vice Admiral but had not been to sea since the 1820s.<sup>23</sup> His subsequent *Organization and Maneuvers of Steam Fleets* (1856) built on these early ideas. Although his recommendations were never employed in practice, as far as we know, a modification was included to subsequent versions of the general signal book. The 1857 French Ministry of

Marine book *Tactique navale* for both sail and steamship was translated in 1859 for the benefit of Royal Navy officers. Additional privately published books, such as Sir Howard Douglas' *Naval Warfare with Steam* (1859), appeared on steamers in combat but no changes were made in Admiralty fighting instructions. On the other hand, the impact of the Battle of Lissa (1866) was that primacy was given in programming developments to the ram over the gun.

The impact of the ironclad was to once again raise the specter of invasion by France.<sup>24</sup> It was claimed that steam had "bridged the Channel," and that 30,000 Frenchmen could rush across in a single night. The result of this technological innovation was a shift in strategy rather than doctrine. No longer would the Royal Navy alone be sufficient for defense of the realm, but a sizeable portion of the standing army would have to garrison the coastline as well.

Doctrinal development continued under the auspices of Admiral Sir Geoffrey Hornby. While in command of the British Flying Squadron (1869-1871), he experimented with tactics under steam. Hornby appears to have been the first flag officer to arrange for the Channel Squadron of ironclads, which he commanded from 1872-1875), to act as *pelotons*, or separate tactical groups. The Admiralty approved of his concepts in 1874 and incorporated them into its signal book of 1879. Unofficial writings on navy doctrine continued to be sponsored by various professional associations which offered prizes as inducements for creative thinking and writing. Of some small note is the recognition that after the Royal Navy swept the seas of their enemies, they then also turned to scientific research and pursuits of discovery.<sup>25</sup> This somewhat parallels the more recent shift in the U.S. Navy to military operations other than war--which includes environmental concerns.

The next major expression of formal doctrinal thought came with the writings of Vice Admiral Philip Colomb. The older of two brothers, both of whom wrote about naval matters, Philip retired from active service and took a position as an instructor at the Royal Naval College, Greenwich. While still a Commander, Philip had studied the results of the Battle of Lissa and nearly, but not totally, embraced the primacy of the ram over the gun. Philip concentrated his later research efforts and writing on the science of navy tactics. His approach was inductive with due credit given reasoning, experience, and history. Philip Colomb's major contribution was *Naval Warfare: Its Ruling, Principles and Practice Historically Treated*, published in 1891.

*Naval Warfare* is more than a doctrinal book. It contains rich discussions about strategy, is unabashedly pro-navy, and parallels the work done in the United States by Rear Admiral Alfred Thayer Mahan which generally eclipsed Colomb's efforts. Within the pages of *Naval Warfare*, one can find the doctrinal concepts of decisive battle, blockade, and fleet-in-being as means to obtain command of the sea and therefore: (1), defense of the homeland; (2), defense of sea lines of communication; and (3), the ability to move the army overseas for offensive action. Colomb followed this work with his shorter *Essays on Naval Defence* (1896), reprinting a series of chapters, articles, and lectures at RUSI.

Colomb and Mahan's writings in favor of warfare by annihilation, the decisive battle, and an offensive doctrine met with favor by those of the *matériel* school, like Admiral Lord John Fisher, who favored the expansion of the Royal Navy and development of the *Dreadnought*. These writings may not have been official Admiralty doctrine, but they certainly were internalized by the officer corps and accepted as unofficial doctrine representing the preferred views about war. To put it simply, for the *matériel* school, war was reduced to a technical problem with mathematical and mechanical solutions. War should be fought on the offensive with superior weapons since the new likely enemy (Germany) would at least have technological parity and might even have technological superiority.

When Japan decided to create a Western navy, it chose to model its fleet and its navy doctrine on that of the British. In their first major fleet engagement at the Battle of the Yalu (1894), the Japanese employed aggressive British tactics in ships maximizing speed over armor and guns to decisively defeat the Chinese. On the other hand, the Japanese did not charge, nor ram, nor seek a *mêlée*.

About this time, there also came the 100th anniversary of the British victory at Trafalgar. A great celebration was held and the myth of the Nelson "touch" was perpetuated. What was the "touch," however? Was it the "band of brothers," the myth of the offense, the undisciplined *mêlée*, or the charismatic personality of Nelson himself? With the rapid development of new technology, bright navy officers turned to programming for bureaucratic success. Due to the absence of continued enemies at sea, they also turned to warfighting ashore for glory. Indeed, one of the more important of the First Sea Lords of this era, Admiral Sir Arthur Wilson, earned a Victoria Cross while fighting ashore in the Sudan in 1884.<sup>26</sup>

What had happened was that doctrinal development in the navy stagnated and the myth of Nelson, carefully cultivated and perpetuated by Admiral Fisher, provided the new unwritten doctrine for warfare at sea. This unwritten doctrine included official adherence to stagnant fighting instructions with a tacit understanding that one could do no wrong if he aggressively engaged the enemy. Thus the Royal Navy at once simultaneously embraced, with its head, the formalism of the fighting instructions enforced by modern signals, as well as, with its heart and soul, the aggressive and relatively unconstrained spirit of Nelson.

The next major British thinker about navy doctrine was Sir Julian Stafford Corbett.<sup>27</sup> His historical analyses of doctrine, strategy, and tactics in the days of sail are classics: *Fighting Instructions, 1530-1816* (1905), *Signals and Instructions, 1776-1794* (1908), and *Some Principles of Maritime Strategy* (1911). To truly understand Corbett, one must see him as advocating the antithesis of conventional wisdom at the time and knowing that he was doing it. Simply put, Corbett argued against the mindless embracing of the offensive, wars of annihilation, and the Nelson "touch" in favor of cool historically-based analyses during which one should investigate all forms of warfare and set maritime operations into the context of the war as a whole.

Sir Winston Churchill noted that when he came to the Admiralty in 1911, he found that there was not a single moment in the career of an officer where he was obligated to read, let alone be examined in, books on navy warfare. Hence he organized the Naval War Staff to study the lessons of history and apply them to naval war planning strategy. Corbett used history to devise permanent "principles" of maritime warfare. These efforts, however, were largely discounted by serving officers who felt that technology had invalidated the lessons of the history of the age of sail and who were otherwise captured by the spirit of Nelson.

While Corbett served as a lecturer at the Royal Naval College at Greenwich, he published his more mainstream doctrinal thoughts in a series of classified booklets known as *The Green Pamphlet*, or more properly the *Strategic Terms and Definitions Used in Lectures on Naval History*. Although these predate *Some Principles of Maritime Strategy*, the doctrinal materials contained in *The Green Pamphlet* are more concise and specifically addressed to a navy audience. Authored by an official lecturer in Fisher's navy, this booklet came close to being official written doctrine even if it was not officially endorsed by Fisher himself--indeed other than the fighting instructions, there were no other doctrinal documents.<sup>28</sup>

Corbett's writings are in fact doctrinal and, although not appreciated by navy officers who were obsessed with the centrality of offense, annihilation, and the decisive battle, remain of interest today. Part of his audience was the army officer who was far too preoccupied with mobilization rates, short war and offensive doctrines, and rail timetables to understand the important role to be played by sea power.<sup>29</sup> It simply is true that there is far more to navy warfare than seeking out and destroying an enemy fleet. Corbett attempted to explain: how initiative can be part of the defensive form of warfare,<sup>30</sup> the role of the fleet in being first employed in 1690, and that because of technological innovations, surprise no longer meant escape but now could foretell disaster.

It is also true that seapower alone is not enough. Corbett attached importance to joint operations. The post-Fisher Admiralty generally ignored Corbett's theses and went so far as to put a disclaimer on his subsequent documentation of the Royal Navy's performance during World War I.<sup>31</sup> Despite his problems in "selling" his doctrinal message, there is a great deal of value in Corbett's writings for any naval Service making the move toward operations more integrated with political objectives and in concert with other Services.

### World War I

Britain's navy doctrine prior to World War I stressed combined arms and was practiced in frequent battle maneuvers.<sup>32</sup> A good deal of flexibility was demonstrated by the fleet during the war, but upon occasion, battle squadrons were tied to synchronized movements *en masse*, as they were in the 18th century battle lines. September 1914 marked a return to the commanders-in-chief overall cognizance over the fighting instructions. New instructions, some hundred pages in length, entitled *Grand Fleet Battle Orders*, were issued over the signature of Admiral Earl John Jellicoe.<sup>33</sup> These fighting instructions attempted to provide guidance for all eventualities and offered the unit commander very little opportunity for his

own initiative. They were reissued several times during the war by Jellicoe and by his successor, Admiral Sir David Beatty.<sup>34</sup>

With World War I, open discussions on doctrine became more difficult. Instead, these discussions took place within the Naval War Staff and involved all of the issues that one would have expected: the proper method to meet the challenge of an invasion; commerce protection; amphibious warfare; and fleet engagements. Churchill was dissatisfied with anything that reeked of passive defense, but he had no specific doctrine for how his preferred offensive was to be carried out. His off-handed political direction often gave the Admiralty fits.

In one such case, Rear Admiral Sir Christopher Craddock found himself facing a superior force commanded by Admiral Graf Maximilian von Spee.<sup>35</sup> Despite the lack of training and crews that were mobilized reservists, Craddock sought an engagement against the Germans and was promptly defeated at the Battle of Coronel (1914). Churchill had not answered Craddock's cable, implying that he would engage a superior force, nor had he dispatched sufficient forces to deal with the threat. The Admiralty attempted to salvage the situation at the last minute, but it was up to a relief effort at the Battle of the Falklands (1914) to redress the loss.

Craddock was probably influenced in his decision to engage by public opinion demanding that something be done about German Navy raiders and the ongoing court martial of one of his colleagues for failing to engage a marginally superior enemy force. If the Nelson legacy of aggressiveness, as informal doctrine or new strategic culture, can be carried too far, it probably was at Coronel.<sup>36</sup> Far better to have massed sufficient forces to have dealt with von Spee than to have suffered a humiliating defeat in the first major sea battle since Trafalgar. The "cult of the offensive" can be disastrous for naval forces--the defense is an honorable alternative when appropriate and, at the Coronel, it would have been.

The pre-war French *jeune école* and the new technologies allowing impressive amounts of firepower to be massed in smaller, swift, expendable forces, had an impact on the employment of the Channel Fleet during the war. When faced with the mortifying loss of three cruisers six weeks after the outbreak of the war, all sunk within one hour by the same submarine, in addition to the ever present threat of the High Sea Fleet in mortal combat, the Royal Navy wisely elected to choose a distant vice close blockade. Simply put, navies could not allow their principle fighting machines to be whittled away by throw-away strike forces. Essentially, the Royal Navy was replicating the fleet-in-being strategy first employed by Admiral Lord Herbert Torrington in 1690.

In the long-awaited clash between Jellicoe's Grand Fleet and Vice Admiral Reinhard Sheer's High Sea Fleet off Jutland (1916), the Royal Navy paid the price for having not instilled initiative into the minds of its admirals. When Sheer executed the *gefechtskehrtwendung*, or battle turn away together, independently acting battle squadrons trained to seize the initiative might have taken advantage and turned the battle into a decisive



victory. As it was, Jutland is a strategic-level success for the allies, but Jellicoe is doomed to forever be second-guessed for failing to put the High Sea Fleet on the bottom. Jellicoe, of course, was operating within approved doctrine when he turned his fleet away from torpedo threats and declined a night engagement.

On the other hand, after years of concentration on decisive fleet engagements, when it came to the doctrine for amphibious operations, the Royal Navy fell somewhat short. A landing in German East Africa was successfully neutralized. The disastrous attempt at Gallipoli resulted in a Royal Commission of investigation, but their analysis did not really get to the heart of the matter. It was not until after the beginning phase of the next world war that amphibious doctrine was no longer discredited and was successfully mastered.

Despite years of unofficial doctrinal writings on the proper method of safeguarding the sea lines of communication, the navy absolutely failed to organize and maintain convoys for its vital shipments coming by sea. As had the Parliament been the driving force behind convoys as early as 1650, 1708, 1792, 1798, and 1803,<sup>37</sup> it fell to the political leadership to force the navy to adopt convoys--three years after the commencement of hostilities. An internal study by younger officers in the Admiralty came to the correct conclusions but failed to convince their seniors.<sup>38</sup> They did convince Admiral William S. Sims, USN, who had been sent to Britain to study ways in which the U.S. Navy might be employed as a part of the Grand Fleet. Sims, in turn, had the opportunity to present his views on the value of convoys to Prime Minister Lloyd George. The Prime Minister forced the change, which in turn resulted in the replacement of the First Lord and the First Sea Lord.<sup>39</sup>

Initiative was not totally dead in the Royal Navy. In its operation of submarines, Q-ships, and the flotilla craft of the Dover Patrol, the old spirit of Nelson was alive. These commands, however, were of more junior officers. The senior leadership at the navy had lost the lessons of history and reverted to conservatism.

### The Inter War Years

Attempts to influence doctrine in the Royal Navy were also undertaken by an outspoken insider, a critical navy officer who managed to remain upwardly mobile--Admiral Sir Herbert Richmond.<sup>40</sup> A friend and confidant of Corbett, and as Assistant Director of Operations on the Naval War Staff, Richmond established his *bone fides* as a serious scholar and then led the "Young Turks" reform movement prior to World War I. Richmond also challenged the decisive battle orthodoxy of the navy and managed to remain in active service until an enforced retirement in 1931. Although Richmond did not change the battleship dominated doctrine of the day (nor did the opening days of World War II), his legacy was the founding of the Naval Society and its journal *The Naval Review* in 1912.<sup>41</sup> One could write on the pages of this journal the most heretical of articles since authorship need not be disclosed and distribution was restricted. From the lessons of the difficulty of the Royal Navy in abandoning the battleship-dominated decisive engagement doctrine, it would appear that

sound doctrinal development must contain a forum for free and open discussion that is outside of official channels.

Within the Royal Navy itself, a study of the combat experiences of the past war was undertaken at all levels of staff and at the appropriate training and educational institutions.<sup>42</sup> Indeed, one could say that the navy was obsessed with re-fighting the Battle of Jutland. Some of this effort achieved the desired affect of revisiting certain established doctrinal principles, such as the avoidance of night actions, and the *Grand Fleet Battle Orders* were revised in 1924 and 1928 or 1929. Unfortunately, the bulk of the effort actually cemented the navy into the rigid position that the decisive battle between surface ships (sailing in long parallel lines firing long distance artillery at each other) was the primary way to achieve a decision at sea, and new technological opportunities largely slipped by.

Some experimentation with alternative doctrines for war at sea did occur in the fleet during the inter-War years.<sup>43</sup> Combined arms were used in an exercise off Bombay in 1924 and Admiral Sir A. Ernle M. Chatfield did use aircraft for long-range strikes in fleet maneuvers in the early 1930s. Generally, the Royal Navy did not develop the proper doctrine for the use of submarines (indeed they favored eliminating them via arms control), aircraft, and amphibious warfare. Blind faith was placed in the improved anti-aircraft guns (hence self-defense fighters were not required in great numbers) and in the Asdic detection system for finding submarines.

The new fighting instructions still emphasized surface engagements and convoying of fast military convoys. No attention was paid to the refinement of doctrine for the convoying of slow merchant ships and this task was not emphasized in subsequent fleet exercises either. Although the global system of naval intelligence and the similar global system of Naval Control of Shipping (NCS) had been kept alive from its World War I days, the navy awaited German actions at sea before implementing the convoy system after the outbreak of the war in 1939.<sup>44</sup> Convoy duty was seen as an attrition-oriented defensive style of warfare during an era where the culture of the navy emphasized the offensive and annihilation warfare.

Of the possible assumed enemies, the navy concentrated its planning against Japan and the reinforcement and relief of Singapore. A sound doctrine for war was developed in this area of operations that made full use of dominion resources, distant water offensive minelaying, and minesweeping. Fleet exercises in the Mediterranean were models for planned engagements in Southeast Asia.<sup>45</sup>

Of the criticism that can be laid at the door of the British armed forces during the inter-War years, the Royal Navy is the least to blame--given the relative higher degree of success that it had in the initial stages of the next war.<sup>46</sup> Compared to the Royal Air Force (RAF), which had myopia centered around strategic bombing, and the army, who had not centralized doctrine and approach to training, the navy did remarkably well in preparing for World War II.<sup>47</sup> All of the Services, however, did poorly when it came to the development of joint military doctrine and planning.<sup>48</sup>

## World War II

Prior to the war, the navy was often criticized for relying more on new technology as the solution to combat problems than thinking through better ways to fight.<sup>49</sup> Yet in subsequent battles, these new technologies would prove critical. In many ways, the navy would prove far more successful than the army due, in part, to a systematic approach to doctrine and training.

In 1939, a new set of *Fighting Instructions* again stressing battle fleet concepts were issued by the commanders of the Atlantic and Mediterranean fleets with a preface statement that they were not mandatory.<sup>50</sup> On the other hand, the disaster of the small squadron which initially met the German surface raider *Bismarck* can be attributed, in part, to handling in strict accordance with those fighting instructions. Local commanders never again repeated that error and the bulk of subsequent navy operations were conducted with the fighting instructions as a guide but not compulsory. Perhaps it was the influence of absorbing the aircraft into fleet operations that finally ended reliance upon fighting instructions that had been borne in the age of sail. In general, Royal Navy commanders fought surface engagements on the offensive and with a great deal of flexibility.

The introduction of the aircraft into the Royal Navy is a story that is fraught with extremely important doctrinal lessons.<sup>51</sup> One cannot really fault the Admiralty for not recognizing the potential of the airplane when it was first offered--most military Services were similarly blind. The shape of doctrinal development for fleet aviation was disastrously shaped by a decision made during World War I that the navy wing of the Royal Flying Corps (RFC) would form the first line of defense against German *Zeppelin* attacks. Although individual aviators fought bravely, it set the tone that fleet aviation performed auxiliary and defensive duties.

The loss of the Fleet Air Arm to the Royal Air Force (RAF) during the inter-War years is a story that has been well told elsewhere.<sup>52</sup> Air power doctrine was developed by another service whose preoccupation was not maritime operations. Fleet officers relied on a very small cadre of aviation officers to help them understand how to integrate their low performance airplanes into battleship-dominated navy doctrine.<sup>53</sup> The culmination of these efforts was the successful combined arms Battle of Matapan (1941) which included the use of aircraft as long-range strike assets (predating the same role by the U.S. Navy at the Battle of the Coral Sea).

At the last major fleet versus fleet battle of the Royal Navy, off Cape Matapan, Admiral Andrew Brown Cunningham demonstrated all of the initiative and decisiveness to qualify him as the heir to the Nelson mantle.<sup>54</sup> Cunningham had the advantage of air cover, radar, and *Ultra*. The Italians had the advantage of speed and successfully avoided a total rout in their first and last attempt to challenge control of the Mediterranean during World War II. Perhaps due to a series of pre-war exercises experimenting with the use of navy aircraft as strike platforms, Cunningham managed to master combined operations and made good use of all of

his assets. With the recognition of the value of air power, the Mediterranean Fleet changed its standard tactical formation from the battle line to an antiaircraft circular formation.

Following Matapan, the influx of new lend-lease aircraft and pilots trained in the United States resulted in virtual wholesale adoption of American navy doctrine by the British Pacific Fleet (BPF). The BPF was molded into an American fast carrier task force that operated in support of amphibious landings, ground forces ashore, and in independent strikes against land targets. Due to the lack of a similar logistical train and differences in the complement of the air wing, the BPF generally operated in their own independent area of operations rather than as an integrated part of the U.S. Pacific Fleet. It had taken nearly forty years, and two world wars, for doctrine in the Royal Navy to shift from being centered around the battleship to the aircraft carrier.

Not all transfer of doctrinal information flowed from the U.S. to Great Britain, however. In the area of antisubmarine patrols, it would take the U.S. Navy its own trial by fire to conclude that offensive antisubmarine operations were not the most effective way to ensure that convoys reached their destination.<sup>55</sup> In an interesting contrast to the British Navy's preoccupation with the destruction of surface raiders with offensively-oriented hunting groups, they published the defensive *Atlantic Convoy Instructions* in 1941 or 1942 that set forth the doctrinal principles for the safe arrival of convoys via escorting and attrition warfare. These instructions were finally accepted by the U.S. Navy as well as other allied navies. Of note is the late date of publication, there being no standing written doctrine prior to that.

#### Doctrinal Development During the Cold War<sup>56</sup>

Immediately after the war, some purely national doctrinal publications were produced that capitalized upon the knowledge gained during the war.<sup>57</sup> However, the cooperation between the allied navies during World War II set the stage for the end to the uniquely different British way of war at sea and its replacement by allied doctrine. By the end of the war, the Royal Navy had shifted its primary striking and sea control force to the aircraft carrier and the U.S. Navy had begrudgingly (but only temporarily) accepted the value of convoys. Navy planning shifted from a national function to an allied response and doctrine had to be accepted by all of the nations participating at sea in the North Atlantic Alliance. The new Atlantic Striking Fleet would fulfill the role previously played by the Grand Fleet and Home Fleets of the two previous world wars. British ships operated within standing naval forces in the Atlantic, in the Channel, and in the Mediterranean. An alliance "concept of maritime operations" set the tone for subordinate standardized allied tactical publications (ATPs) and other similar manuals.

In the 1950s, the British and Americans once again debated maritime doctrine,<sup>58</sup> including the proper way to ensure North American materials and supplies arrived in Europe in the event of war. The Americans wanted to fight NATO's navy forces on the offensive. The British remembered the lessons of two world wars. Finally, the Royal Navy published a

definitive Naval Staff History study on the value of convoys: *The Defeat of the Enemy Attack Upon Shipping, 1939-1945: A Study in Policy and Operations* (1957),<sup>59</sup> which settled the matter. Other doctrinal debates occurred over the role of aircraft carriers and amphibious warfare.

With residual responsibilities of empire, the Royal Navy maintained a capability for limited overseas crisis response (warm wars) and peacetime presence outside of the NATO context. Attention was paid to amphibious warfare and assault by helicopter from the sea. Over time, the naval presence out of area was reduced, only to be supplemented during actual combat operations such as during the successful Falklands War. Obviously, combat experience during national emergencies benefited the NATO alliance in the form of doctrinal lessons learned.<sup>60</sup>

The introduction of nuclear weapons into the Royal Navy similarly followed allied and American doctrine, although the British made it clear, from time to time, that a national decision on release might precede that made by the alliance. Initial planning centered on allied nuclear use whose primary purpose was ashore. On the other hand, when the Americans appeared to become preoccupied with nuclear submarines off their own shores, it was British efforts that pushed the U.S. Navy into an offensive doctrine that would catch these submarines before they left home waters.

The close integration of the Royal Navy and U.S. Navy in the Cold War-era, especially with the U.S. Navy's Maritime Strategy, continues into the present era. As with the doctrinal renaissance in the U.S. Navy, there is a similar effort by the British to once again look at centralized navy doctrine.<sup>61</sup> This developmental effort is taking place within the context of United Nations (UN), NATO, and Western European Union (WEU) sanctioned maritime operations in the Mediterranean under a doctrinal void. Efforts are being made within European nations to fill that doctrinal void and it would appear that the doctrinal renaissance will occur on both sides of the Atlantic.

## Conclusions

This brief overview of the history of doctrine in the Royal Navy demonstrates that there is a consistent 450+ year history of combat doctrine in that Service. Doctrine in the Royal Navy has existed in every conceivable form--from formal written centralized fighting instructions to additional written and verbal instructions by regional fleet commanders-in-chief and local squadron commanders. Doctrine has both helped the Royal Navy win in tactical combat and, from time to time, has been the source of major problems.

Emphasis in doctrinal development in the Royal Navy has been on tactical doctrine which, in part, contributed to the long years of successful combat by the fleet. That is not to say that strategic and operational-level military doctrine have been totally overlooked, but the Royal Navy, like the French Navy, devoted its primary attention to the development of Service-unique doctrine at the tactical-level of warfare. This is somewhat surprising, since

Britain was involved in global conventional war and numerous major regional contingencies against France and other nations for many years. The Royal Navy did not have a coherent doctrine at all levels of warfare. Only in more recent times has the Royal Navy given preeminent attention to strategic and operational-level multinational doctrine, specifically NATO doctrine, and more recently to unilateral joint doctrine. Due, in part, to these upper-level doctrinal deficiencies, fighting at the strategic and operational-levels of warfare suffered as well.

Perhaps because doctrine focused on the tactical-level of warfare, doctrine was very often issued by the fleet commander-in-chief rather than the Admiralty. Even Admiralty-issued doctrine could generally be modified by the fleet commander. Thus there appears to have been some degree of recognition that doctrine for a world-wide fleet might vary due to different locations, assumed enemies, and preferences for combat as intended by the local commander. The focus on tactical-level doctrine also resulted in less than full development of doctrine for more complex multinational operations.

It was a perceived void in multinational doctrinal development that, in part, caused the U.S. Navy to challenge the doctrinal leadership of the Royal Navy during the early days of the NATO alliance. The U.S. Navy did not win all these bureaucratic battles, however, and British views drove NATO concepts in a number of key areas--especially with regard to convoy defense instead of offensive operations against raiders on the high seas. Independent British doctrine continues to exist in addition to NATO navy doctrine to govern nationally-mandated operations taken outside of the multinational environment.

The type of navy doctrine that was adopted by the British has been very much shaped by the type of their government, geographic position, the assumed threat, the overall strategy being pursued, the seafaring character of their people, their unique strategic culture, and, often times but not always, from the lessons learned from history. During the 20th Century, doctrine has been more successfully implemented in the navy than in the army--leading to the conclusion that the relatively more competence shown on the battlefield by the fleet, rather than by the army, can be in part explained by the Royal Navy's better understanding and adherence to doctrine.

On the other hand, there have been important negative lessons also learned from British naval doctrinal development. The ever-present search for the heir to the throne of Admiral Lord Horatio Nelson led to a myth that superior combat performance is primarily a result of an aggressive and offensive doctrine oriented towards naval warfare of annihilation (decisive battles)--when history has clearly shown the need for the wise commander to select the defense and attrition warfare when it is most appropriate. As long as the U.S. Navy continues to view its roots as being that of the Royal Navy, then American officers will need to come to grips with both the positive and the negative aspects that can be learned from a review of the heritage of doctrine in Great Britain--including overemphasis on the offensive.

Nelson's "touch" included his charismatic personality, audacity, and boldness in the face of the enemy, pre-battle meetings with his "band of brothers" to share the commander's intent and also--and Nelson knew this at the time--an enemy who was not on par with his own finely-honed forces. Nelson deserves all of the credit that he has earned, but as time has passed, we have forgotten the effects on the French Navy of the Revolution and Napoleon Bonaparte. Naval doctrine based upon the mindless "cult of the offensive" will doom a fleet just as it doomed millions of soldiers in trenches during World War I.

Perhaps the greatest lesson that we can learn from the British experience is how difficult it can be to change doctrine. The battleship's reign survived through World War I, the long inter-war years, and the initial stages of World War II. From British naval history, it should be obvious that a system is needed to ensure that success in the fleet resulting from actions taken outside of established doctrine can result in timely changes to the established orthodoxy. It will take the dedicated officer much time and effort to apply both the positive and negative lessons of the history of doctrine in the Royal Navy to the issues facing navies today. We dare not ignore this history.

#### Notes

1. Carl H. Builder, *The Army in the Strategic Planning Process: Who Shall Bell the Cat?*, R-3513-A, Santa Monica, CA: The RAND Corporation, Arroyo Center, Prepared for the U.S. Army, April 1987, p. 46. An expanded version of this study was published as *The Masks of War: American Military Styles in Strategy and Analysis*, Baltimore, MD and London, UK: The Johns Hopkins University Press, 1989, p. 32.
2. This opinion was shared by one of the first U.S. Navy officers to formally advocate naval doctrine. See: Lieutenant Commander Dudley W. Knox, USN, "The Rôle of Doctrine in Naval Warfare," U.S. Naval Institute *Proceedings*, 41, no. 2 (March-April 1915): 344-345.
3. The age of sail and other sections of this paper are heavily based upon: Rear Admiral S.S. Robison, USN (Ret.), *A History of Naval Tactics From 1530 to 1930*, Annapolis, MD: U.S. Naval Institute, 1942; E.B. Potter and Fleet Admiral Chester W. Nimitz, USN, eds., *Sea Power: A Naval History*, Englewood Cliffs, NJ: Prentice-Hall, Inc., 1960; John Creswell, *British Admirals of the Eighteenth Century: Tactics in Battle*, London, UK: George Allen & Unwin, Ltd., 1972; Clark G. Reynolds, *Command of the Sea: The History and Strategy of Maritime Empires*, New York, NY: William Morrow & Co., 1974; Helmut Pemsel, *A History of War at Sea: An Atlas and Chronology of Conflict at Sea from Earliest Times to the Present*, Major i.G.D.G Smith, trans., Annapolis, MD: Naval Institute Press, 1977 [translation of *Von Salamis bis Okinawa* first published in 1975]; Brian Tunstall, *Naval Warfare in the Age of Sail: The Evolution of Fighting Tactics 1650-1815*, Dr. Nicholas Tracy, ed., Annapolis, MD: Naval Institute Press, 1990; and Geoffrey Till, *Maritime Strategy and the Nuclear Age*, 2nd ed., New York, NY: St. Martin's press, 1984, p. 23-24, 39-49.

4. Alonso de Chaves, *Quatri partitu en cosmografia practica*, also known as *Espejo de navegantes*, Madrid, SP: *Instituto de Historia y Cultura Naval*, 1983 [original version written from 1520-1538].
  
5. "Traditional tactics, 1530: 'A book of orders for the war...' written by Thomas Audley at the command of Henry VIII, ca 1530," John B. Hattendorf, et. al., *British Naval Documents: 1204-1960*, Hants, UK: Scholar Press [for the Navy Records Society], 1993, p. 83-84. There is some evidence of a previous doctrinal publication, the *British Black Book*, issued in the age of oars. See Vice Admiral William Ledyard Rodgers, USN (Ret.), *Naval Warfare Under Oars: 4th to 16th Centuries--A Study of Strategy, Tactics and Ship Design*, Annapolis, MD: United States Naval Institute, 1939, p. 105.
  
6. The numbers of cannon at sea during major fleet engagements is an often overlooked point. For example, at the Battle of Trafalgar (1805), the gun power of Admiral Lord Horatio Nelson's fleet exceeded that massed by Napoleon Bonaparte at Waterloo (1815) by a factor of six. See John Keegan, *The Price of Admiralty: The Evolution of Naval Warfare*, New York, NY: Viking Penguin, Inc., 1988, p. 47.
  
7. Captain Stephen Wentworth Roskill, RN (Ret.), *The Strategy of Sea Power: Its Development and Application*, [based upon the Lees-Knowles Lectures delivered in the University of Cambridge, 1961] London, UK: Collins, 1962, p. 39.
  
8. "Fighting instructions, 1636," John B. Hattendorf, et. al., *British Naval Documents: 1204-1960*, Hants, UK: Scholar Press [for the Navy Records Society], 1993, p. 160-161.
  
9. Historians are constantly refining these dates as they discover additional materials. These dates serve to illustrate the point that doctrinal development was on-going and constant.
  
10. Such a formal division of opinion into two schools of doctrinal thought is not clearly documented in history. On the other hand, from a review of history, it is reasonably clear that there were often two relatively distinct views on doctrine as demonstrated by fleet engagements and courts-martial. Historians have provided names to two "schools" which may not have actually existed in fact, but probably did exist in spirit.
  
11. John Keegan, *The Price of Admiralty: The Evolution of Naval Warfare*, New York, NY: Viking Penguin, Inc., 1988, p. 45.
  
12. Captain Alfred Thayer Mahan, USN, *The Influence of Sea Power Upon History, 1660-1783*, Boston, MA: Little, Brown & Co., 1890, p. 356.
  
13. John Clerk of Elden's book was republished with additional materials and notes by senior naval officers. For example, see: John Clerk, Esq. of Eldin, *An Essay on Naval Tactics, Systematical and Historical with Explanatory Plates, in Four Parts*, 3rd. ed., with notes by [Admiral George Brydges] Lord Rodney and an Introduction by a Naval Officer, Edinburgh, Scotland: Adam Black, 1827.



14. This battle is simply known by its date since, unlike most battles fought in the littoral during the age of sail, it occurred well out to sea, some 400 miles off the coast of Europe.
15. Captain Alfred Thayer Mahan, USN, *The Life of Nelson: The Embodiment of the Sea Power of Great Britain*, Boston, MA: Little, Brown, and Co., 1897 [1943 reprint], p. 239; and Admiral of the Fleet of the Italian Navy Giuseppe Fioravanzo, *A History of Naval Tactical Thought*, Annapolis, MD: Naval Institute Press, 1979 [original manuscript prepared in 1956], p. 96.
16. "Naval tactics, 1851: Captain Alexander Milne, a Lord of the Admiralty, to Vice-Admiral Sir William Parker, Commander-in-Chief Mediterranean, 4 October 1851," John B. Hattendorf, et. al., *British Naval Documents: 1204-1960*, Hants, UK: Scolar Press [for the Navy Records Society], 1993, p. 629, n. 2.
17. John Keegan, *The Price of Admiralty: The Evolution of Naval Warfare*, New York, NY: Viking Penguin, Inc., 1988, p. 37-38.
18. Captain Alfred Thayer Mahan, USN, *The Life of Nelson: The Embodiment of the Sea Power of Great Britain*, Boston, MA: Little, Brown, and Co., 1897 [1943 reprint], p. 294, 297.
19. "Trafalgar: the order of battle, 1805," John B. Hattendorf, et. al., *British Naval Documents: 1204-1960*, Hants, UK: Scolar Press [for the Navy Records Society], 1993, p. 425.
20. Michael A. Palmer, "Lord Nelson: Master of Command," *Naval War College Review*, 41, no. 1 (Winter 1988): 105-116. I am indebted to Michael A. Palmer for additional analysis which will be found in the prologue "A Regular Confusion" to his forthcoming book: *Command at Sea: Naval Command and Control Since the Sixteenth Century*, draft dated February 1994.
21. William Koenig, "Navarino," *Epic Sea Battles*, S.L. Mayer, ed., Seacaucus, NJ: Chartwell Books, Inc., 1975, p. 62-83.
22. The Royal United Services Institute for Defence Studies (RUSI) annual essay contest for a Gold Medal often results in follow-on publications of a doctrinal nature by junior officers. For example, see Lieutenant Charles Campbell, RN, *Essay on Tactics in an Action on the Open Sea with Existing Weapons*, London, UK: Harrison, 1880.
23. Basil Greenhill and Ann Giffard, *The British Assault on Finland, 1854-1855: A Forgotten Naval War*, Annapolis, MD: Naval Institute Press, 1988, p. 80.
24. Norman H. Gibbs, "The Origins of Imperial Defence," *Maritime Strategy and the Balance of Power: Britain and America in the Twentieth Century*, John B. Hattendorf and Robert S. Jordan, eds., New York, NY: St. Martin's Press, 1989, p. 25.

25. Gwyn Prins and Robbie Stamp, *Top Guns & Toxic Whales: The Environment & Global Security*, London, UK: Earthscan Publications, Ltd. p. 146, 150-151.
26. Arthur J. Marder, *From the Dreadnought to Scapa Flow: The Royal Navy in the Fisher Era, 1904-1919, Volume I: The Road to War, 1904-1914*, London, UK: Oxford University Press, 1961, p. 212.
27. See Donald M. Schurman, "Julian Corbett's Influence on the Royal Navy's Perception of Its Maritime Function," *Mahan is Not Enough: The Proceedings of a Conference on the Works of Sir Julian Corbett and Admiral Sir Herbert Richmond*, Commander James Goldrick, RAN and John B. Hattendorf, eds., Newport, RI: Naval War College Press, 1993, p. 51-63.
28. In his Introduction to a recently re-issued version of *Some Principles of Maritime Strategy*, Eric J. Grove argues the case for Corbett's influence on the Royal Navy, including assistance in the drafting of the 1914 *Grand Fleet Battle Tactics*. See Julian Stafford Corbett, *Some Principles of Maritime Strategy*, Annapolis, MD: 1988, p. xli.
29. Barry D. Hunt, "The Strategic Thought of Sir Julian S. Corbett," *Maritime Strategy and the Balance of Power: Britain and America in the Twentieth Century*, John B. Hattendorf and Robert S. Jordan, eds., New York, NY: St. Martin's Press, 1989, p. 111.
30. An opinion shared by Lieutenant Commander Dudley W. Knox, USN, "The Rôle of Doctrine in Naval Warfare," U.S. Naval Institute *Proceedings*, 41, no. 2 (March-April 1915): 328-329.
31. "The Lords Commissioners of the Admiralty have given the Author access to official documents in the preparation of this work, but they are in no way responsible for his reading or presentation of the facts as stated," disclaimer found opposite title page of: Sir Julian Stafford Corbett, *Naval Operations: History of the Great War Based on Official Documents*, London, UK: Longmans, Green and Co., 1920.
32. Paul Kennedy, "Britain in the First World War," *Military Effectiveness, Volume I: The First World War*, Allan R. Millett and Williamson Murray, eds., Boston, MA: Unwin Hyman, for the Merghon Center, Ohio State University, 1988, p. 31-79.
33. Captain Stephen Wentworth Roskill, RN (Ret.), *The Strategy of Sea Power: Its Development and Application*, [based upon the Lees-Knowles Lectures delivered in the University of Cambridge, 1961] London, UK: Collins, 1962, p. 101-142 is the basis of the section on World War I.
34. Captain Stephen Wentworth Roskill, RN (Ret.), *Naval Policy Between the Wars: Volume I - The Period of Anglo-American Antagonism, 1919-1929*, London, UK: Collins, 1968, p. 533.

35. William Koenig, "Coronel and Falkland," *Epic Sea Battles*, S.L. Mayer, ed., Seacaucus, NJ: Chartwell Books, Inc., 1975, p. 144-159.
36. The search for an heir to Nelson within the Royal Navy can be seen in books such as: John Horsfield, *The Art of Leadership in War: The Royal Navy From the Age of Nelson to the End of World War II*, Westport, CT: Greenwood Press, 1980. A similar search in the U.S. Navy is evidenced by: Charles Benedict Davenport, *Naval Officers: Their Heredity and Development*, Washington, DC: The Carnegie Institution, 1919.
37. Owen Rutter, *Red Ensign: A History of Convoy*, London, UK: Robert Hale, Ltd., 1943.
38. "The adoption of convoy, 1917: 'Some suggestions for Anti-Submarine Warfare' by Major Maurice Hankey, R.M.A., Secretary of the War Cabinet, 13 February 1917," John B. Hattendorf, et. al., *British Naval Documents: 1204-1960*, Hants, UK: Scolar Press [for the Navy Records Society], 1993, p. 761-766.
39. See especially Admiral of the Fleet Peter Baron Hill-Norton, RN (Ret.) and John Dekker, *Sea Power: A Story of Warships and Navies from Dreadnoughts to Nuclear Submarines*, London, UK: Faber and Faber, 1982, p. 118-119, 170. The authors make the case the aversion to convoying was alive and well in the Royal Navy at the time of writing.
40. See also Daniel A. Baugh, "Admiral Sir Herbert Richmond and the Objects of Sea Power," *Mahan is Not Enough: The Proceedings of a Conference on the Works of Sir Julian Corbett and Admiral Sir Herbert Richmond*, Commander James Goldrick, RAN and John B. Hattendorf, eds., Newport, RI: Naval War College Press, 1993, p. 13-49.
41. Commander James Goldrick, RAN, "The Irresistible Force and the Immovable Object: The Naval Review, the Young Turks, and the Royal Navy, 1911-1931," *Mahan is Not Enough: The Proceedings of a Conference on the Works of Sir Julian Corbett and Admiral Sir Herbert Richmond*, Commander James Goldrick, RAN and John B. Hattendorf, eds., Newport, RI: Naval War College Press, 1993, p. 83-102.
42. Captain Stephen Wentworth Roskill, RN (Ret.), *Naval Policy Between the Wars: Volume I - The Period of Anglo-American Antagonism, 1919-1929*, London, UK: Collins, 1968, p. 533.
43. Credit should be given for the use of carrier-based aircraft as long-range strike assets in the Mediterranean Fleet exercise of July 1928. The attacks, however, were against "enemy" aircraft carriers and not against the main battle fleet. Similarly, Combined Staff exercises and planning during the inter-War years included air strikes from the sea against the shore. Geoffrey Till, *Air Power and the Royal Navy 1914-1945: A Historical Survey*, London, UK: Jane's Publishing Co., 1979, pp. 162-163, 166.
44. Marc Milner, "Anglo-American Naval Co-operation in the Second World War, 1939-45," *Maritime Strategy and the Balance of Power: Britain and America in the Twentieth*

*Century*, John B. Hattendorf and Robert S. Jordan, eds., New York, NY: St. Martin's Press, 1989, p. 244; and "The protection of trade, 1937: Memorandum for the Committee of Imperial Defence by the Chiefs of Staff Sub-Committee, 2 February 1937," John B. Hattendorf, et. al., *British Naval Documents: 1204-1960*, Hants, UK: Scolar Press [for the Navy Records Society], 1993, p. 781-787.

45. Captain Stephen Wentworth Roskill, RN (Ret.), *Naval Policy Between the Wars: Volume I - The Period of Anglo-American Antagonism, 1919-1929*, London, UK: Collins, 1968, p. 538.

46. Brian Bond and Williamson Murray, "The British Armed Forces, 1918-39," *Military Effectiveness, Volume II: The Interwar Period*, Allan R. Millett and Williamson Murray, eds., Boston, MA: Unwin Hyman, for the Merghon Center, Ohio State University, 1988, p. 98-130.

47. For an extremely well-developed case study of the difficulty in changing doctrine, see: Harold R. Winton, *To Change an Army: General Sir John Burnett-Stuart and British Armored Doctrine, 1927-1938*, Lawrence, KS: University Press of Kansas, 1988, especially p. 238-240.

48. See especially Barry R. Posen, *The Sources of Military Doctrine: France, Britain, and Germany Between the World Wars*, Ithaca, NY: Cornell University Press, 1984, p. 159-163.

49. Williamson Murray, "British Military Effectiveness in the Second World War," *Military Effectiveness, Volume III: The Second World War*, Allan R. Millett and Williamson Murray, eds., Boston, MA: Unwin Hyman, for the Merghon Center, Ohio State University, 1988, p. 114.

50. Captain Stephen Wentworth Roskill, RN (Ret.), *The Strategy of Sea Power: Its Development and Application*, [based upon the Lees-Knowles Lectures delivered in the University of Cambridge, 1961] London, UK: Collins, 1962, p.170, 247-248, is the basis of the section on World War II.

51. See James J. Tritton, "Introduction of Aircraft Carriers into the Royal Navy: Lessons for the Development of Naval Doctrine," *The Naval Review*, 82, no. 3 (July 1994): 260-267; and Norman Friedman, Thomas C. Hone, and Mark D. Mandel, "The Introduction of Carrier Aviation into the U.S. Navy and the Royal Navy: Military-Technical Revolutions, Organizations, and the Problem of Decision," draft report prepared for the Director, Net Assessment, Office of the Secretary of Defense, May 12, 1994, p. 110-163.

52. Geoffrey Till, "Airpower and the Battleship in the 1920's," in *Technical Change and British Naval Policy 1860-1939*, Bryan Rafter, ed., New York, NY: Holmes & Meier publishers, Inc., 1977, pp. 108-122; and Captain Bernard Acworth, RN, *The Navies of Today and Tomorrow*, no place of publication given, Eyre and Spottiswoode, Ltd., 1930, especially chapter 14.

53. "Functions of fleet aircraft, 1936: Admiralty Memorandum on Fleet Air Arm tactics and equipment, December 1936," John B. Hattendorf, et. al., *British Naval Documents: 1204-1960*, Hants, UK: Scolar Press [for the Navy Records Society], 1993, p. 948-949.
54. William Koenig, "Matapan," *Epic Sea Battles*, S.L. Mayer, ed., Seacaucus, NJ: Chartwell Books, Inc., 1975, p. 182-197; and Martin Stephen, "The Battle of Matapan," *Sea Battles in Close-Up: World War 2*, Eric Grove, ed., Annapolis, MD: Naval Institute Press, 1991, p. 48-69.
55. Marc Milner, "Anglo-American Naval Co-operation in the Second World War, 1939-45," *Maritime Strategy and the Balance of Power: Britain and America in the Twentieth Century*, John B. Hattendorf and Robert S. Jordan, eds., New York, NY: St. Martin's Press, 1989, p. 251-254; and Eliot A. Cohen and John Gooch, *Military Misfortunes: The Anatomy of Failure in War*, New York, NY: The Free Press, 1990, p. 59-94.
56. Eric J. Grove, *Vanguard to Trident: British Naval Policy Since World War II*, Annapolis, MD: 1987; and Eric Grove and Geoffrey Till, "Anglo-American Maritime Strategy in the Era of Massive Retaliation, 1945-60," and Joel J. Sokolsky, "Anglo-American Maritime Strategy in the Era of Flexible Response, 1960-80," *Maritime Strategy and the Balance of Power: Britain and America in the Twentieth Century*, John B. Hattendorf and Robert S. Jordan, eds., New York, NY: St. Martin's Press, 1989, p. 271-303, 304-329.
57. For example, two manuals were published immediately after the war: *Naval Control of Shipping in War* (1948) and *Naval-War Manual*, B.R. 1806 (1947).
58. These debates should also be seen in the context of Britain attempting to reestablish its role in the world as a global and first-ranking power. Many of the doctrinal debates revolved around command. For evidence of the depth of these debates, see the declassified papers of Admiral Arleigh Burke found in the Operational Archives of the Naval Historical Center. One such example is an undated position paper "United States/United Kingdom Differences of Opinion." I am indebted to Captain Peter Swartz, USN (Ret.) for providing me a copy of this paper.
59. Naval Staff History [Commander F. Barley and Lieutenant Commander D.W. Waters], Second World War, *The Defeat of the Enemy Attack Upon Shipping, 1939-1945: A Study in Policy and Operations*, Vol. IA (Text and Appendices) B.R. 1376(51)(1A), and Vol. IB (Plans and Tables) B.R. 1376(51)(1B), London, UK: Admiralty Historical Section, 1957 [declassified]. See also "The anti-submarine war, 1939-45: Appendix 3 of the Report of the Maritime Air Defence Committee to the Chiefs of Staff, 3 October 1950," John B. Hattendorf, et. al., *British Naval Documents: 1204-1960*, Hants, UK: Scolar Press [for the Navy Records Society], 1993, p. 873-875.
60. Department of the Navy, *Lessons of the Falklands, Summary Report*, February 1983.

61. "The Practical Application of Maritime Doctrine," first draft, 22 April 1994; "The Foundation of British Maritime Doctrine," second draft, 23 September 1994.

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